NATURAL RESOURCES CONSERVATION SERVICE

CONSERVATION PRACTICE STANDARD

COVER CROP

(acre)

CODE 340

DEFINITION

Grasses, legumes, forbs, or other herbaceous plants established for seasonal cover and conservation purposes.

PURPOSES

- Reduce erosion from wind and water
- Increase soil organic matter
- Manage excess nutrients in the soil profile
- Promote biological nitrogen fixation
- Increase biodiversity
- Weed suppression
- Provide supplemental forage
- Soil moisture management

CONDITIONS WHERE PRACTICE APPLIES

This practice applies on all lands requiring vegetative cover for natural resource protection.

CRITERIA

General Criteria Applicable To All Purposes

Plant species, seeding rates and seeding dates shall be according to Table 1.

Cover crops shall be established by following the appropriate planting guidelines in the following conservation standards:

- Conservation Cover (327) or;
- Critical Area (342) or;
- Pasture and Hayland Planting (512)

The species selected from Table 1 will be compatible with the nutrient management and pest management provisions of the plan.

Cover crops will be terminated by harvest, frost, mowing, tillage, and/or herbicides in preparation for the following crop.

Herbicides used with cover crops will be compatible with the following crop.

Cover crop residue will not be burned.

Additional Criteria to Reduce Erosion From Wind and Water

Cover crop establishment, in conjunction with other practices, will be timed so that the soil will be adequately protected during the critical erosion period(s).

Use no-tillage as the seeding method when possible.

Plants selected for cover crops will have the physical characteristics necessary to provide adequate protection.

The amount of surface and/or canopy cover needed from the cover crop shall be determined using current erosion prediction technology.

Additional Criteria to Promote Biological Nitrogen Fixation

The specific Rhizobia bacteria will either be present in the soil or the seed will be inoculated at the time of planting legumes.

Nitrogen credits from legume cover crops will be accounted for in the nutrient management

plan.

Additional Criteria to Manage Excess Nutrients in the Soil Profile

Cover crops will be established and actively growing before expected periods of high precipitation that can cause leaching.

Cover crop species will be selected for their ability to absorb large amounts of nutrients from the rooting profile of the soil.

The above ground biomass will be removed from the field for maximum nutrient removal efficiency.

Additional Criteria to Increase Soil Organic Matter

Cover crop species will be selected on the basis of producing high volumes of organic material to maintain or improve soil organic matter.

The cover crop will be terminated as late as feasible to maximize plant biomass and still prepare the seedbed for the subsequent crop.

Additional Criteria to Increase Biodiversity

Cover crop species shall be selected that, have different maturity dates, attract beneficial insects, serve as a trap crop for damaging insects, and/or provide food and cover for wildlife habitat management.

Additional Criteria for Weed Suppression

Species for the cover crop will be selected for their chemical or physical competition with weeds.

Cover crop residues will be left on the soil surface to maximize allelopathic (chemical) and mulching (physical) effects.

For long-term weed suppression, perennials and/or biennial species can be used.

Additional Criteria to Provide Supplemental Forage

Species selected will have desired forage traits, be palatable to livestock, and not interfere with the production of the subsequent crop.

Forage provided by the cover crop may be hayed or grazed as long as sufficient biomass is left for resource protection.

Additional Criteria for Soil Moisture Management

Terminate growth of the cover crop sufficiently early to conserve soil moisture for the subsequent crop.

Cover crops established for moisture conservation shall be left on the soil surface until the subsequent crop is planted.

In areas of potential excess soil moisture, allow the cover crop to grow as long as possible to optimize soil moisture removal.

CONSIDERATIONS

The cover crop should be terminated as late as feasible to maximize plant growth and still prepare the seedbed for the subsequent crop.

Deep-rooted species provide maximum nutrient recovery.

Consider that grasses utilize more soil nitrogen, and legumes utilize both nitrogen and phosphorus.

Avoid cover crop species that attract potentially damaging insects.

Acceptable benefits, for most purposes, are usually accomplished when the plant density is at least 25 stems per square foot, the combined canopy and surface cover is at least 60 percent, and the above ground (dry weight) biomass production is at least 2700 lb/acre.

Cover crops may be used to improve site conditions for establishment of perennial species.

PLANS AND SPECIFICATIONS

Specific plans and specifications will be prepared for the practice site. Specifications will include, but are not limited to, recommended species, seeding rates and dates, establishment methods, nutrients needed, and other establishment information. This information shall be recorded in the conservation plan or job sheet or specification

designed to provide specific requirements for the practice.

OPERATION AND MAINTENANCE

Control growth of the cover crop to reduce competition and shading from volunteer plants.

Control weeds in the cover crop by mowing or herbicide application.

Table 1. Below are species, seeding dates, and seeding rates for cover crop plantings. Use the heavier seeding rates when seedbed or seeding conditions are not ideal or when outside the preferred seeding dates.

PLANT	PREFERRED SEEDING DATES (Mon/Day)	SEEDING RATE (PLS/Ac.)	REMARKS
Rye Wheat Oats	9/15 – 10/30	1½ - 3 bu/ac	Rye is more tolerant than wheat to herbicide carryover. Due to a potential allelopathic effect, avoid using wheat or rye for a temporary cover when planning native grasses as the permanent cover.
Arostic Rye	10/15 – 11/15	2 bu/ac	Will germinate at colder temperature. Use for late seeded cover crops. Faster germination and more canopy at cooler temperatures than wheat, rye, or oats. Can be hayed or grazed in winter/spring.
Annual Ryegrass	8/15 – 10/1	18 - 25 lbs/ac	Due to a potential allelopathic effect, avoid using annual ryegrass for a temporary cover when planning native grasses as the permanent cover.
Hairy Vetch	8/1 – 9/10	20 - 30 lbs/ac	Use only in a continuous corn operation because hard seeds may germinate later and pose a problem in wheat or soybeans. May also be used with tobacco.
Tall fescue or Orchardgrass or	2/1 – 4/15 & 8/20 – 10/1	10 - 15 lbs/ac 10 – 15 lbs/ac	These grasses may be seeded with red clover, alsike clover, or ladino clover as indicated below. Use orchardgrass over fescue when wildlife is a concern.
Red Clover or Alsike Clover or Ladino Clover	2/1 – 4/15 & 8/1 – 9/10	5-10 lbs/ac 3-10 lbs/ac 1 lbs/ac	These legumes should be included in a mix with fescue or orchardgrass. Inoculate the legume seeds with proper inoculant.
Crimson Clover	8/1 – 10/15	20-30 lbs/ac	Winter annual legume. Good canopy. Not suited to poorly drained soils. Will produce more forage at low temperature than other clovers. Can be hayed or grazed.
Wheat or rye and ladino clover		1 1/2 bu/ac 1 lb/ac	Lime and fertilize according to soil test. Prepare seedbed and incorporate lime and fertilizer. Mulch around trees or cultivate during growing season to suppress growth of clover and conserve moisture.